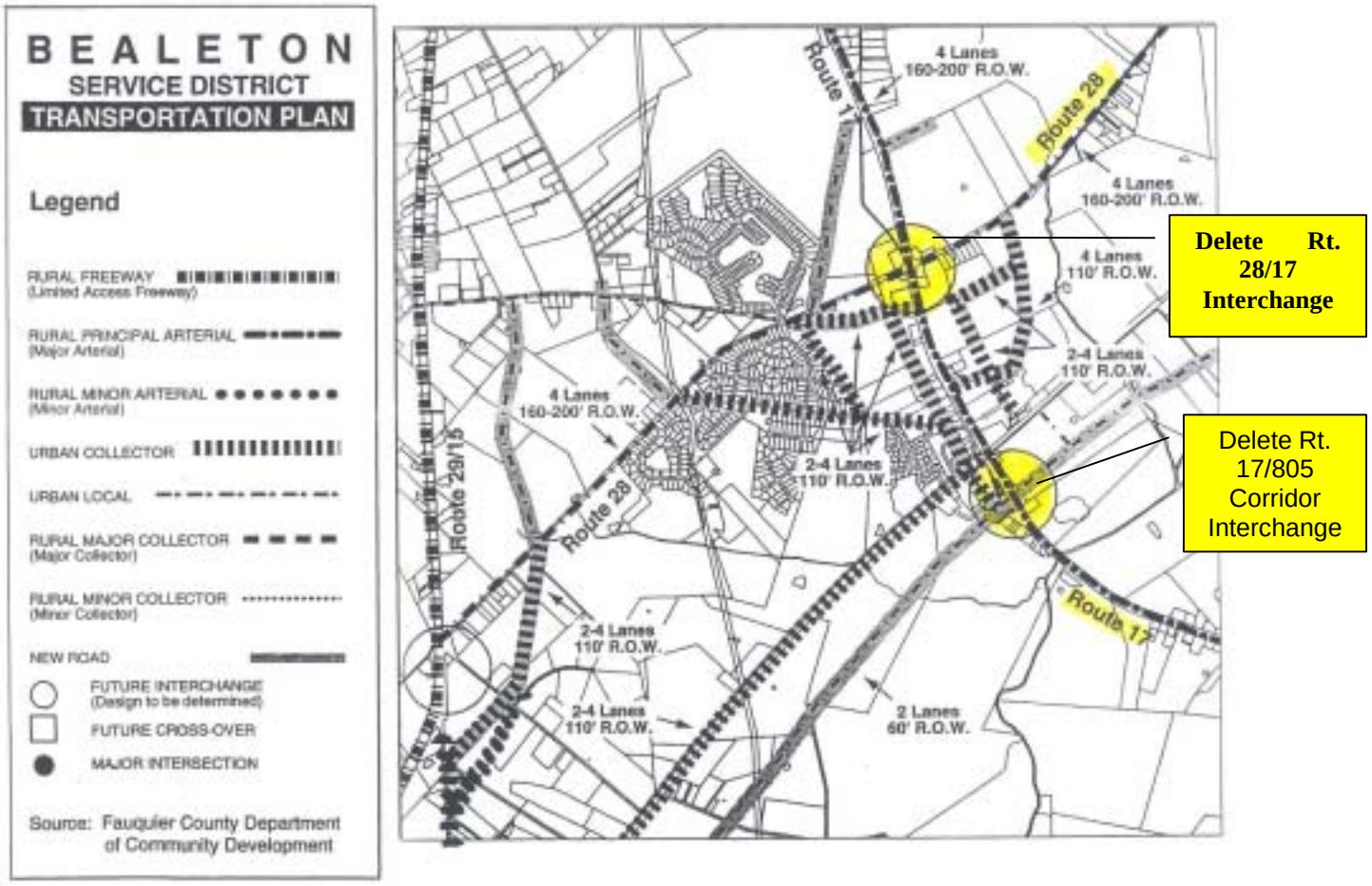
**CHAPTER TEN - TRANSPORTATION**
**Map 10.3: Bealeton Service District Transportation Plan**



**Attachment 2**

**KELLERCO**

DATE: May 4, 2001

TO: Rick Carr/Richard Calderon

FROM: C. Richard Keller

SUBJECT: Future Situation At Route 28/17 Intersection In Bealeton (Village) Service District

As part of the Bealeton Village planning effort, KELLERCO was requested to develop future traffic projections for this at-grade intersection along with related at-grade improvements necessary to achieve a reasonable peak hour level of service. In order to develop this information which can be used for not only detailing the Village Plan but also discussing the need for VDOT's proposed grade separated interchange, we have used the following technical process.

Step 1: Establish the "existing" 2000 AM/PM peak hour traffic situation at this intersection (and two adjacent Route 28 intersections) using available VDOT traffic data. Exhibit 1 depicts the AM and PM volumes.

Step 2: Project the "existing" 2000 AM/PM peak hour traffic volumes to 2010 and 2020 to reflect anticipated corridor and service district growth. To accomplish this, a +4% per year compounded growth rate was applied to Exhibit 1 volumes for both the Route 17 and 28 corridors. This + 4% growth rate was documented by VDOT's Mena Lockwood in a Route 28 memo dated July 5, 2000, which projected intersection traffic to 2020 and 2026. The result of applying the +4% compounded rate to the Exhibit 1 volumes is shown in Exhibit 2 (2010) and Exhibit 3 (2020).

Step 3: Next, HCS 2000 software was applied to the Exhibit 1, 2 and 3 AM and PM volumes to determine the current and future intersection levels of service without any additional roadway impacts. The results are summarized in Exhibit 4 and the HCS runs are in Appendix A.

Note that in 2001 all three intersections operate at acceptable LOS B or C. Traffic volumes for the intersection of Route 28/Schoolhouse Road are show on Exhibit 1, but were excluded from the analysis in 2010 and 2020. In 2001 the LOS is B 10.7 (AM) and B 10.8 (PM) at this intersection. LOS B and C are reasonable criteria for current "rural" conditions, but in 20 years, LOS D is a more reasonable LOS criteria as the area becomes more urbanized.

***Corporate Headquarters***
307 South Loudoun Street, Winchester, VA 22601, 540/535-0081, FAX 540/535-0109

By 2010, without additional roadway improvements the intersection of Route 28 and Oak Shade Road fails with E/D levels of service. The Route 28/17 intersection operates at LOS D/D, which exceeds an acceptable LOS C in 10 years. The Route 28/LHS intersection operates satisfactorily at LOS B and C.

By 2020, all three intersections fail without improvements since five of the six LOS's exceed LOS D, which is the criteria rather than LOS C in 20 years.

Step 4: Finally, various improvements were evaluated using HCS 2000 to determine the extent to which roadway widening could improve future intersectional operating efficiency to LOS C in 2010 and LOS D in 2020. The improvements and new LOS with the improvements implemented are shown in Exhibit 5 and the HCS runs are in Appendix B.

By 2010, the following improvements are needed at two intersections to achieve LOS C or better.

- Route 28/Oak Shade Road

  By providing an additional travel lane on Oak Shade Road, LOS D is achieved without signalization. Installing a signal would provide LOS C or better.

- Route 28/17

  Widening both Route 28 approaches to 4 lanes divided will provide LOS C/C.

  By 2020, a signalized (in 2010) Route 28/Oak Shade Road would operate at acceptable C/B LOS without widening the Route 28 corridor. Two locations would need to be improved.

- Route 28/17

  At the Route 28/17 intersection, the approach volumes are high enough on all approaches to warrant widening both the Route 28 and 17 approaches to six lanes at the intersection only. This would achieve LOS D/D. Since the Route 17 corridor would serve 40,000 to 45,000 vehicles per day by 2020 (see Exhibit 3), the entire Route 17 corridor would probably not be widened to six lanes until the volumes well exceed 50,000 vehicles per day.

  Also, the 2020 volumes projected in this study to not account for any traffic diversions from the Route 17 corridor back to an improved Springfield Bypass interchange or to a new Western Bypass, were it ever built, or to relocated Route 17 or Route 28 corridors per the preferred Bealeton – Remington committee access plan.

- Route 28/LHS

At the Route 28/LHS intersection, were Route 28 widened to 4 lanes divided, an acceptable LOS would be sufficient to achieve LOS C/C unsignalized.

Although not analyzed, the intersection of Route 28 and the shopping center will probably need to be signalized by 2010 and coordinated with the signal at Route 28/17.

Step 5: In summary, this analysis has indicated that 2010 AM/PM traffic can be accommodated by widening a section of Route 28 from east of Oak Shade Road to east of the shopping center entrance and signalizing/widening one approach at the Route 28/Oak Shade Road intersection.

By 2020, Route 28 would need to be widened to six lanes divided from east of Oak Shade Road to east of the shopping center and to 4 lanes divided from east of the shopping center to east of the Liberty High School intersection. In addition, the Route 17 corridor would need to be widened to 6 lanes divided only at the Route 28 intersection.

cc: Charlie Lamb

***Please note that the referenced exhibits in this technical memorandum are available for inspection in the Fauquier County Department of Community Development, 40 Culpeper Street (3rd Floor), Warrenton, VA.***

**Attachment 3**

**KELLERCO**

DATE: July 30, 2001

TO: Rick Carr

FROM: C. Richard Keller

SUBJECT: Recommended Short-Term Action Plan For Route 28 Corridor Between US 15-29 And Prince William County

This past year, KELLERCO has provided technical support to Fauquier County for a variety of technical activities along the Route 28 corridor. This technical process was closely coordinated with VDOT's local Resident Engineer, Mr. Bob Moore, and his staff as well as with the Fauquier County Department of Community Development. Principal technical activities integrated into this assessment are described below.

- Numerous citizen/staff meetings for the following service districts to update the current comprehensive plan elements for
  - Bealeton
  - Calverton
  - Catlett
  - Midland
  - Opal
  - Remington

- Traffic projections for 2010 and 2020 at key intersections along the corridor to familiarize local citizen leaders regarding the need for future intersection and roadway improvements to improve peak hour capacity and safety.
- Development of a conceptual long-term land use and transportation plan for the Bealeton Service District. This plan enhances sub-area access by indicating the need for additional privately funded roads which will provide long-range alternatives to local access via corridor Routes 17 and 28. The draft plan was developed in close coordination with a citizen's committee and VDOT staff to insure that local issues were addressed.

- Documentation of traffic accidents along the Route 28 corridor between 1995-2000 using VDOT data to determine key roadway/intersection problems. Exhibits 1 and 1a show in tabular and graphic format the summary of the VDOT provided accident data.

***Corporate Headquarters***
307 South Loudoun Street, Winchester, VA 22601, 540/535-0081, FAX 540/535-0109

Over this designated five-year period, 55.2% of the Route 28 corridor accidents between US 15-29 and Prince William County occurred within the four service districts. The following tables present the requisite breakdown of accidents by the affected service districts and intervening areas.

| Rank | Service District | Percent of Accidents |
|---|---|---|
| 1st | Calverton | 18.1% |
| 2nd | Bealeton | 15.5% |
| 3rd | Catlett | 12.6% |
| 4th | Midland | 9.0% |

For the segments outside the service districts, where 44.8% of the Route 28 corridor accidents occurred, the accidents were distributed as follows.

| Rank | Other Route 28 Locations | Percent of Accidents |
|---|---|---|
| 1st | Between Bealeton and Midland | 19.0% |
| 2nd | Between Midland and Calverton | 14.6% |
| 3rd | Between Catlett and Prince William County Line | 8.1% |
| 4th | Between US 15-29 and Bealeton | 2.9% |
| 5th | Between Calverton and Catlett (1 accident in 5 years) | 0.3% |

Note that the four highest ranked sections of Route 28 have been indicated in Exhibit 1a.

Besides the previous findings regarding accidents along the Route 28 corridor, VDOT reported, via the Warrenton Residency, that average daily traffic volumes by month are significantly higher in 2001 than in 1999 and 2000. This higher trend in daily traffic is shown in Exhibit 2 for Route 28 about 0.3 mile north of Route 806 in Catlett. Such increasing volumes indicate the need to direct more resources to safety and capacity needs along this corridor.

In view of the information developed through these technical activities, the following short-term action plan is recommended for the Route 28 corridor.

1. Monitor Traffic Speeds and Develop Enforcement Plan

   - Request that state/local police sustain a campaign of concentrated traffic enforcement of the 45 mph speed limit on Route 28 between Route 29 and Prince William County.

   - To supplement state/local police efforts request that VDOT develop a schedule for placing the one available full time “smart” trailer at strategic locations on Route 28 between Route 29 and the Prince William County line. The current trailer “flashes” motorists’ speeds but does not record vehicle speeds.

- Support a request by VDOT to obtain sufficient funds ($3,000 to $5,000) to install a computer on the "smart" trailer so that vehicle speeds can be recorded. Such records would allow any trends in vehicle speeds to be monitored. These findings would then indicate the need and location for more concentrated enforcement by state/local police. This equipment investment for VDOT would allow for a more practical cost effective use of state/local police for traffic enforcement.

- If VDOT cannot make the one full-time available "smart" trailer available for sufficient speed enforcement on the Route 28 corridor, support a VDOT request for purchasing a second "smart" trailer with a computer to record speeds.

2. Construct More Paved Shoulders Along Sections of Route 28

   VDOT currently has a program which Mr. Moore has used to replace narrow gravel shoulders with at least a three-foot paved shoulder. An example of such an improvement is on Route 15/29 and Route 17. Such widening enhances the visibility of the pavement edge lines and provides for more stable vehicle control whenever vehicles need to divert from the paved travel lane onto a shoulder. Narrow gravel shoulders/ditches certainly can contribute to the loss of control for emergency vehicle maneuvers.

   In order to benefit from this VDOT program, the County should request that VDOT consider the following roadway sections for consideration of shoulder improvement projects.

   - Route 28 from Liberty High School to the Midland project for selective shoulder upgrading and culvert modification to reduce occasional roadway flooding problems.

   - Route 28 between Calverton and Catlett for complete shoulder widening and paving to at least three feet.

   In order to maximize the shoulder widths within available right-of-way, poles may need to be relocated and trees removed.

3. Intersection Safety Study at Route 28/Oak Shade Road

   Request that VDOT's District Traffic Engineer evaluate in detail traffic accidents for the past five years at this intersection to determine the need for improvements to enhance peak period traffic safety. Currently, this intersection has no northbound left turn lane and a hillcrest to the south, which may impede sight distance for vehicles exiting Oak Shade Road.

4. Special Traffic Study for Route 28 Corridor

   With increasing traffic volumes and no currently stated funded roadway improvements along the corridor except the longer term interchange proposed by VDOT at Route 17/28 in Bealeton and the Cedar Run Bridge project on Route 28, the County should request that a special corridor traffic study be completed by VDOT or a consultant as soon as possible. A careful assessment of various fixed object accidents along the entire corridor would determine the need to relocate poles or remove trees, which may be within the existing right-of-way. Perhaps VDOT would also consider "grooved" rumble strips either on the edge of the pavement or within the double yellow center lines to deter run off roadway accidents or illegal passing on double yellow lines. This action could lead to a test section of Route 28 being selected for special treatment at the locations described below.

   - The section between Oak Shade Road and Midland which is experiencing increased traffic volumes due to new development at Bealeton and activities at the Liberty High/Middle School tract; and

   - Within the Calverton Service District which has a significant number of driveways and intersections

5. Monitor Traffic Accidents at Route 17/28, Meetze Road and Other Intersections Especially in Calverton

   Request that VDOT continue to monitor traffic accidents at all the two important intersections to verify the need for advance warning devices and travel lane modifications or signalization to improve peak period capacity and/or safety.

6. Purchase Sufficient Short-Term Right-of-Way for Possible Later Improvements

   Should the purchase of additional right-of-way be necessary for short-term Route 28 improvements, it is recommended that sufficient right-of-way width be purchased for future improvements; i.e. additional left/right turn lanes or possible widening to four lanes.

7. Secure Project Funding

   Secure funding to implement the traffic safety and selected roadway widening improvements as interim measures before more significant roadway projects are funded and implemented. The following funding sources could be considered.

   - A request could be made of VDOT through the Culpeper District Engineer to secure funding for Route 28 corridor improvements. Funding sources could include construction, hazard elimination or special funds. However, VDOT would probably require that any "interim" improvements be compatible with previous CTB project improvement approvals.

- Safety trailer funds could be secured from DMV or possibly VDOT's maintenance funds.
- DMV highway safety mini grants could be requested by the County. Each school site along Route 28 may be eligible for a $1,500 grant. Contact:

Mr. Doug A. Stader, Manager
Community Transportation Safety Program
Transportation Safety Services
540-801-0374

- Special grants could be secured from DMV for increased traffic enforcement.

cc: Bob Moore, VDOT Resident Engineer
Jeff Hores, VDOT District Traffic Engineer
Sharon McCamy, Fauquier County Board of Supervisors
Ray Graham, Fauquier County Board of Supervisors
Gary Christie, Rappahannock-Rapidan Regional Commission

***Please note that the referenced exhibits in this technical memorandum are available for inspection in the Fauquier County Department of Community Development, 40 Culpeper Street (3rd Floor), Warrenton, VA.***